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ORIGINAL ARTICLE

# Just "Culture"? A qualitative study on stressors impacting surgical clerkship student learning and well-being

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## Abstract

**Purpose** Transition into the surgery clerkship is stressful and challenging for third-year medical students. We conducted this study to explore medical students' learning stressors during the surgery clerkship which may diminish their learning and well-being. Findings will help to identify targets for future educational well-being interventions to enhance students' preparedness to enter surgery clerkship.

**Methods** We conducted semi-structured interviews with medical students who had completed their surgery clerkship in 2022 at a university-based hospital system using convenience sampling. The interviews were recorded, transcribed, and de-identified. Investigators iteratively coded and analyzed transcripts using a framework method for emerging themes until reaching data saturation.

**Results** We performed 17 interviews with medical students rotating on main campus and community sites from 2 consecutive clerkship cohorts. Each interview was approximately 30 min. Three dominant themes emerged regarding stressors that negatively influenced medical student learning and well-being: 1) expectation mismatch (e.g., student felt incompetent at driving a laparoscope and believed this was a skill she was expected to have), 2) exclusion from the team (e.g., perceiving that their questions are burdensome to the team, and 3) logistical challenges (e.g., where and when to arrive on the first day of clerkship or how to navigate the complexities of the operating room schedule).

**Conclusion** Our study suggests three predominant stressor themes that may jeopardize medical student surgery clerkship learning and well-being. Interventions during clerkship orientation are recommended to establish expectations, clarify logistical confusion, and build a welcoming and supportive surgical culture to facilitate student integration within the medical team.

**Keywords** Surgical Education · Medical Student Education · Wellness

## Introduction

Clinical clerkships present unique challenges to medical student learning and well-being, given students are moving from the traditional classroom learning environment to a patient-care workplace setting. Medical students must adapt their learning into various clinical contexts at operational levels (i.e., learning through delivery of care). Therefore, it is important to characterize learning stressors in the clinical environment to promote medical student learning and well-being.

Medical educators have conducted numerous studies to investigate stress associated with medical student learning and examine possible interventions to improve student well-being [1–5]. However, each clinical specialty has a unique workplace learning environment (e.g., departmental culture, workplace communication style, working relationship). A context-specific intervention, thus, becomes necessary to enhance medical students' learning and well-being [6, 7].

Surgery is a clinical environment that may be particularly stressful for medical students. The surgery clerkship presents unique challenges related to unfamiliarity with the operating room, surgical workflow, negative perceptions of surgical culture, and fear of mistreatment [8]. Students

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report stressors and fears related to burnout, long hours, fatigue, lack of expectations, being perceived as incompetent and exclusion from the medical team [9–11]. These stressors, seemingly inherent to the surgical clerkship, are also commonly compounded by instances of mistreatment. In a recent study of more than 2,000 graduating medical students, one in five reported experiences of mistreatment, and a significant proportion occurred in the perioperative setting [12]. Moreover, almost one-third of verbal abuse instances occurred in the perioperative setting, and half of these instances described yelling. Likewise, mistreatment involving physical contact was also more likely to occur in the operating room (OR) [12].

Given the formidable challenges associated with clerkship learning within the context of surgical care delivery in particular, in-depth insights from clerkship students become essential to create a supportive learning environment. Whereas the majority of studies have used surveys to identify stressors [1, 5, 6, 8–10, 12–14], comparatively few have utilized interviews which we hypothesize are better equipped to contextualize stressors and provide clearer insight regarding the source and nature of stress experienced by medical students. Thus, the aim of this study was to interview medical students to characterize perceived learning stressors during their surgical clerkship. We also asked medical students to provide advice for future students entering the clerkship on how to thrive during their rotations to design future interventions to enhance learning and well-being.

## Methods

### Study design, setting, and participants

This interview-based descriptive phenomenology qualitative study was conducted at a large public academic medical with approximately 200 medical students enrolled in the College of Medicine each year. All third-year medical students who had completed their surgery clerkship at our university-based medical system (i.e., main campus and five community sites) in 2022 were eligible for this study. This study was approved by our institutional review board.

### Data collection and analysis

Student interviewees were recruited using convenience and snowball sampling. Semi-structured interviews were conducted utilizing open-ended questions designed to evoke illustrative examples of stressful scenarios during the surgical clerkship, and to ask students to provide advice for future peers. The semi-structured interview guide, which was generated upon discussion and consensus of the primary investigators, is shown in Table 1.

The interviewers were surgical residents trained in qualitative interviewing and who had not interacted with the medical student interviewees during their clinical clerkships (TW, DB) and a non-clinical qualitative methodology expert (XPC). Each interview lasted between 10 and 45 min, with an average interview duration of 22 min. All interviews were recorded on Zoom (Zoom Video Communications, San Jose, CA). The interviews were transcribed, de-identified, and analyzed by two investigators (DB, TW) using DeDoose (SocioCultural Research Consultants LLC, Manhattan Beach, CA). Iterative content analysis/coding was performed utilizing the framework method [15]—a systematic, rigorous approach for content analysis that incorporates both inductive and deductive approaches to analysis—for emerging themes until data saturation was achieved. The research team reviewed regularly and discussed disparities and emergent themes until reaching consensus.

## Results

In total, 17 medical students participated in the interviews. 70.6% (12/17) were female, 23.5% (4/17) were Asian, 23.5% (4/17) Caucasian, 17.6% (3/17) Hispanic, 11.8% (2/17) Black/African American, 5.9% (1/17) Middle Eastern, and 17.6% (3/17) preferred not to disclose.

**Table 1** Semi-structured interview guide

| Purpose | Key questions |
|---|---|
| Exploration surgical clerkship learning stressors | "Tell me about a stressful experience on your surgical clerkship." |
| | "What made this experience stressful and Why?" |
| Exploration of student approaches to cope with learning stressors | "How did you cope with this stressful event/experience?" |
| | "What specific approach to you have for managing stress or improving wellness during the surgery clerkship?" |
| Eliciting student feedback for upcoming student preparation for the surgery clerkship | "What are one or two items of advice that you would give to a student about to start their surgical clerkship." |
| | "Is there any specific way you think the program could have better prepared you for success on your surgery clerkship?" |

Three predominant themes about surgery clerkship stressors emerged from thematic analysis. These were: 1) expectation mismatch, 2) logistical challenges, and 3) perceived exclusion from the team. Examples of representative quotations are shown in Table 2 and described below.

## Expectation mismatch

Students reported the discrepancy between what they were expected/asked to do and what they knew how to do was a stressor associated with their learning. They described being asked to perform a technical skill (i.e., controlling a laparoscope, suturing, making an air knot) that they did not know how to perform. Students attributed the stress experienced to the perception that they were not meeting an expectation. This stressor was not limited to technical skills, but also triggered when students felt they were not meeting medical knowledge expectations. Some noted that medical knowledge expectations were often unstated or broadly described (i.e., to prepare for operations by studying anatomy, without specification of what anatomy to pay attention to while studying). They also reported stress associated with the discordance between the content they studied and the questions they were asked on the wards, which they believed gave teams the impression that they were not prepared or did not care enough to prepare. Students also noted that

**Table 2** Predominant clerkship stressors

| Theme | Representative quotations |
|---|---|
| Expectation mismatch | "… driving the [laparoscopic] camera was a really really important thing, and I had no idea what I was doing, but I think that the team that I was with expected me to know this. … It's not that hard to move the camera, but I didn't even know what this technology was, the physics behind it didn't make sense, where I should be pointing the camera didn't make sense." [interviewee 220712] |
| | "One of the first stressful moments was when an attending … told me to suture a porthole, and I go, oh, I've never sutured anything before, so I freaked out a little bit, but then she showed me how and she was really nice"… that was my first moment of oh my gosh I don't know what is going on. [Interviewee 220719a] |
| | "Trying to figure out what everyone's expectations are, because like, even person to person, specialty to specialty, even if like one person in the like um the rotation tells me these like are their expectations, what I ended up learning was, those are their expectations alone, like everyone has very different expectations." [Interviewee 220727] |
| Exclusion from the team | "I felt like they were not on our side at all, and it was really weird. I remember the first day when we walked in, you know there's like a rounding table in a conference room, and like half the chairs were empty, so we go to sit down with the residents, and the they were just like, 'actually, med students, like I need you to sit on the side' and that kind of like set the tone… and that was the first day'" [Interviewee 220713] |
| | "I remember I was initially introducing myself, but then I kind of felt like based on my interactions, like based on, I guess the lack of interaction I was having, I was like maybe I shouldn't be doing this, maybe I should be more in the background … I'll just kind of like be quiet". [Interviewee 220714] |
| | … people had given me advice to like ask to do things, but I just didn't feel comfortable doing that because I just felt like I was getting in the way and … I didn't know how to do all the technical things, so for me to ask to do something that I've never done before, especially like if like I just feel like I would be slowing things down was just intimidating. [Interviewee 220719a] |
| | "At one point we were shushed or hushed when we were trying to like to like introduce ourselves … it was just really bizarre, yea, it was just like that feeling of not wanting, of them not wanting me there." [220719a] |
| | "My chief didn't want anything to do with me so they would kind of just like throw me at the intern; intern also didn't want very much to do with me, so I was like, 'what do I do about this'? Can I just like go to SICU and see what that's like, can I go see consults with people … just like other things that I wouldn't be bothering these two people". [Interviewee 220714] |
| Logistical challenges | "Usually, … I would kind of ask them to print off the list so I would know in advance what time the surgeries were, but in this instance I asked for a copy and they said no because they didn't think that I needed that information, but then also, like wouldn't tell me [the OR schedule]. We went right after that to their education time for 3 h … When I came back I assumed I missed the surgeries, but they turned out to be delayed, but because I didn't have it printed off like normal, I missed it. The chief resident came by and kind of was upset that we weren't in the surgery." [Interviewee 220713] |
| | "Generally … at the beginning, like before the rotation started I was stressed because I didn't know what I was supposed to do … the expectations weren't very clear, so I was just following around the residents, but the residents didn't always know what was supposed to go on, and eventually I realized that there were like very few expectations for students to do anything, so then from there I was like okay this is chill, I'm just gonna do whatever I want to do". [Interviewee 220719a] |
| | "We have to do a week of nights, I was never shown, or at least like the resident never showed me a place where I could sit and like lay down, because after a certain time when the floor quiets down, everyone kind of like goes to sleep". [Interviewee 220719a] |

expectations were highly variable, even to the level of each individual team member, making it challenging to meet a moving target. This was compounded at times by inexplicit expectations; for example, being told to prepare to present three patients on morning rounds, but then being asked by someone else on rounds why they did not prepare to present more.

## Logistical challenges

Logistical challenges specific to the operating room schedule and workflow is another stressor associated with surgery clerkship learning. For instance, students described not knowing which cases to be at and when to show up where. Students also noted that the fast pace of rounding and shorter/fewer periods of formal teaching were unique challenges to their learning. Several other practical logistical challenges were also reported, such as not knowing where and when to arrive until the night before their rotation and not knowing where they can store their possessions during the day or at night. These logistical challenges are uniquely challenging on the surgical clerkship because of the wide range of clinical settings that students are expected to integrate themselves into. On the wards, variable individual rounding times, in outpatient clinics, and in various operating rooms for which operating times and locations change frequently and without warning are reported as few other challenges.

## Exclusion from the team

Students described exclusion from the team (i.e., experienced trouble integrating into a surgical team) was a strong stressor impacting their learning. They noted that it was difficult to know how to be helpful or what they could practically do as a member of the surgical team in daily practice. In particular, the other two themes "logistical challenges" and "expectation mismatch" exacerbated their anxiety of being excluded from the team. Furthermore, the fast pace of rounding in surgery and the lack of explicit expectations challenged their sense of belonging on the team, to the point that many students felt like an interruption or that they were "getting in the way" or "bothering" the surgical team. There were also instances of mistreatment reported, including being hushed when introducing themselves or being asked to sit in a separate area when there were open seats at a table.

## Feedback for future surgery clerkship students

Based on the interviews, four recurring recommendations that student interviewees would likely give to future upcoming surgery clerkship students: 1) identify an ally, 2) introduce yourself to all members of the team, 3) engage in self-directed learning, and 4) avoid taking things personally. These recommendations were each related to managing and coping with stressors on the surgical clerkship, which may form the foundation for future surgery clerkship interventions to enhance student well-being and prepare students for success on their clerkship learning.

### Identify an ally

Student interviewees recommended future surgery clerkship students to find an approachable member of the team, typically a resident, whom they could ask questions of and ask for guidance as a learning ally. They found that interacting one on one with such an ally was often more beneficial than asking the clerkship director/faculty questions in a group setting or during the flow of the workday (i.e., while rounding). A learning ally was also useful in resolving and/or lessening all three identified stressors, as it allowed students to better navigate expectations from other residents or faculty that they interacted with less, which then improved the sensation of being part of the surgical care team, and improved clarification of logistical expectations.

### Introducing oneself to all members of the team

Student interviewees suggested that students introduce themselves early and often to all members of the team. Particularly in the operating room, students usually felt uncertain of their role and as if they were interlopers in a setting where all other individuals knew what they were doing. Students who introduced themselves assertively to all team members found this approach allowed them to be more involved during clinical care activities. In addition, students noted that sometimes faculty or residents would not introduce themselves first, and taking initiative was better than waiting uncomfortably.

### Self-directed learning

*Student interviewees* commented that it was helpful to take ownership of their own learning. For example, when students did not know how they could be helpful, they would try to learn from other members of the team (i.e., nurses, scrub techs, anesthesia staff, etc.). They found that learning from other team members gave them new ways to contribute to the team (i.e., learning how to configure stirrups or arm rests during room turnover). In contrast, students who described passively waiting to be told or asked to do tasks felt increased stress when it occurred, because they then felt that they were being evaluated on their performance of those related tasks.

#### Avoid taking things personally

Students also recommended not to take things personally which may mitigate stress from "expectation mismatch" and "exclusion from the team". They noted occasional negative interactions with several different team members including residents, surgical faculty, and other non-physician care team members (e.g., surgical technologists, nurses). They commented that the frequency of interpersonal interactions with new people in an unfamiliar environment made it easy to misinterpret poor interactions as a reflection of their competence or skill level. It would be more beneficial for students to assume these interactions were circumstantial and not because of their own competence.

## Discussion

The surgical learning environment presents unique and significant challenges to medical students (i.e., fast pace, unfamiliarity with the operating room, fear and negative perceptions of surgical culture); this makes identification of stressors critical. Consistent with prior literature, this study identified three major stressors: expectation mismatch, exclusion from the team, and logistical challenges. Further, we identified four recurring pieces of advice for future students: identify an ally, introduce oneself to all members of the team, pursue self-directed learning, and avoid taking interactions personally. Interestingly, introducing oneself to staff is also a recommendation from the American Medical Association as a tip for the surgical clerkship [16]

There are two unique strengths of this study. First, the interviewed cohort of students is exceptionally diverse with a high proportion of students who identify as Underrepresented in Medicine (URM): 70.6% female and 76.5% of students identified as non-Caucasian. This is an anomaly within the existing literature; comparatively, we found male to female ratios closer to 1:1 (McKinley 52% female [5], Dunham 49.4% female [6], Burney 57% female [8], McKinley 51.8% female [9], Chapman 60% female [14]). Notably, race was surprisingly not reported in several studies [1, 5, 8–10, 12–14], and when it was reported, there was a majority Caucasian demographic (Dunham 59.8% Caucasian) [6]. Although we did not systematically seek a diverse cohort, this is certainly a strength of the study, and it may reflect a selection bias for URM students who are disproportionately affected by implicit bias, likely compounding the burden of stress. Clearer reporting of demographic data in medical education literature and further study of stressors affecting URM students is needed.

A second strength of this study was its methodology, (semi-structured interviews), which allowed us to contextualize stressors and provide more granular insight into the experience of medical students immersed in the complex clinical learning environment of surgical care delivery. Interviewing students requires more time and resources which is likely why most studies identify stressors by survey [1, 5, 6, 8–10, 12–14]. Although the stressors our study identified are consistent with the existing literature, we were able to probe deeper, asking: what specifically made an experience stressful, how did the student cope with stress, and what advice would they recommend to a peer? Understanding context is crucial for identifying the root cause of stress and thereby how to prevent it in the future. For example, allowing students to describe their experiences also made clear that stressors can stem from real or perceived expectation mismatch. For example, a student asked to perform a technical skill (i.e., drive a laparoscope, tie an air knot), may perceive that the team expects them to know how to perform the skill well even when there is no such explicit expectation stated by the team. Whether expectation mismatch or exclusion from the team is real or perceived is relevant to informing improvement initiatives. For example, the laparoscopic camera stressor could easily be prevented by explicitly stating to the student, "I do not expect you to know how to do this well but try to keep our instruments in the middle of the screen; we will guide you along the way". It is interesting that, in this context, students advised to "not take things personally" which may offer an advantage in preventing stress secondary to perceived expectation mismatch.

Furthermore, interviewing students made the interconnectedness of stressors vividly apparent: logistical challenges, such as the fast pace of rounding and unfamiliarity with the surgical workflow, contributes to perceived exclusion from the team (i.e., feeling like they were "getting in the way" "slowing things down" or "bothering" residents). Furthermore, the real or perceived sense that expectations vary from individual to individual can make it nearly impossible to feel like an integrated member of a team rather than merely trying to keep track of expectations.

Student feedback helps to provide helpful information for clerkship directors and residency program directors to consider how to improve trainee learning and in-training communication (e.g., involving residents in student education and employing teaching aids to facilitate residents as educators) [17, 18] as well as how to optimize surgical learning environment (e.g., created a video-vignette curriculum to help students and faculty identify a shared understanding of what constitutes mistreatment). [19]

This study has several limitations. First, it was conducted at a single institution. Our findings may not represent all types of learning stressors that surgery clerkship students encounter at other institutions. Second, it is a qualitative study and thus cannot avoid potential cognitive bias (e.g., recall bias). However, the interview-based method of our study does allow our study to contribute useful context to

characterize stressors in more depth than most of the existing literature. Further, the study is limited by selection bias given the small sample size; however, this also resulted in a particularly diverse study cohort allowing us to characterize stressors among URM students.

## Conclusion

This interview-based study suggests that surgical clerkship is stressful for third-year medical students due to expectation mismatch, exclusion from the team, and logistical challenges. Interviewing students allowed us to characterize stressors in more detail and among a more diverse cohort of students than present in the existing literature. We explored how these stressors are inter-related and compound one another. Student advice included identifying an ally, introducing oneself, pursuing self-directed learning, and to not take things personally, and this advice should be emphasized to future students prior to their surgical clerkship to improve their experience and decrease stressors which detract from learning and wellness.

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**Data availability** Requests for transcript data will be accomodated upon reasonable request.



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